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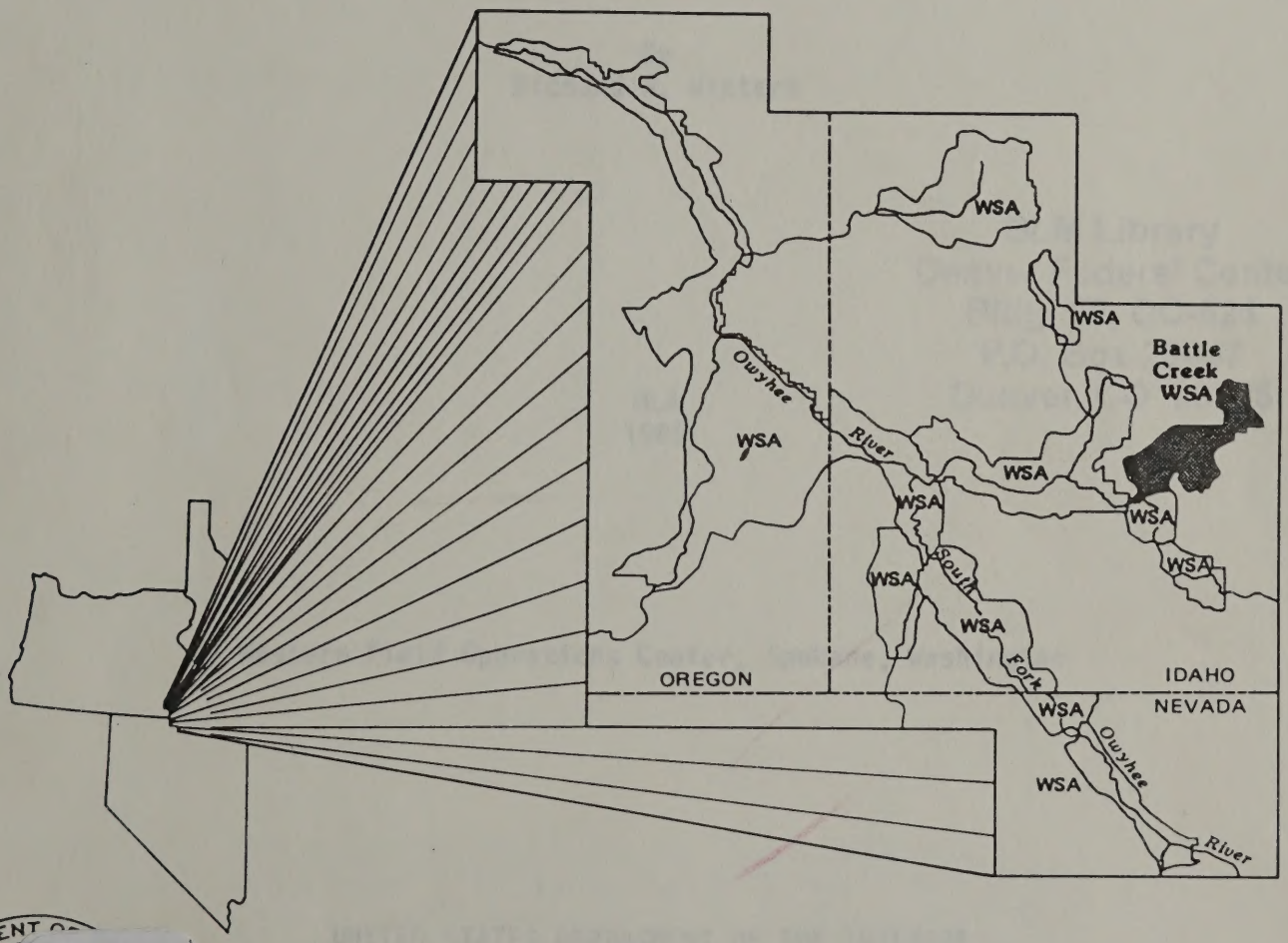

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MINERAL RESOURCES OF THE BATTLE CREEK WILDERNESS STUDY AREA (BLM NO. ID-16-49E), OWYHEE COUNTY, IDAHO

By
Richard A. Winters

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SUMMARY

The 31,880-acre Battle Creek Wilderness Study Area (WSA) was evaluated for mineral resources by the U.S. Bureau of Mines in 1984. No mining district is in the area, nor were any mines or claims recorded or found. Oil and gas leases, or lease applications, covered about half the area in early 1984. No known exploration has occurred. The entire WSA is covered with thick volcanic flows. Faults in these volcanic rocks may have provided conduits for mineralizing solutions emanating from the basement rocks; however, no evidence of mineral deposits was detected from rock samples collected along the faults. Reconnaissance samples from sand and gravel deposits yielded gold at less than $\$0.02/yd^3$. The source of the gold is assumed to be intrusive rocks or the Challis Volcanics about 20 miles north of the study area near the headwaters of Battle Creek. No economic concentrations of minerals were found in the WSA.

INTRODUCTION

Mineral surveys of designated wilderness study areas (WSAs) 1/ are conducted by the U.S. Bureau of Mines (USBM) and the U.S. Geological Survey (USGS) at the request of the U.S. Bureau of Land Management (BLM). The USBM researches the mining and mineral exploration history and evaluates mines, prospects, and mineralized areas within or adjacent to WSAs. The USGS studies WSAs by regional geochemical and geophysical surveys and geological mapping. The USBM and the USGS investigations are summarized in a joint report used to help determine the suitability of WSAs for inclusion into the National Wilderness Preservation System. Although the immediate goal of this USBM study is to provide data for the President, Congress, BLM, and the general public for land-use decisions, the long-term objective is to help insure that the Nation has an adequate and dependable supply of minerals at reasonable cost.

In June, 1984, USBM personnel conducted field investigations in the 31,880-acre Battle Creek WSA, Owyhee County, Idaho (figs. 1 and 2). This report is one of a series of mineral land assessment reports covering lands adjacent to the Owyhee River and its major tributaries in southwest Idaho, southeast Oregon, and north central Nevada.

1/ A WSA is a roadless area or island that has been inventoried by the U.S. Bureau of Land Management and found to have wilderness characteristics as described in section 603 of the Federal Land Policy and Management Act and Section 2(c) of the Wilderness Act of 1965, (78 Stat. 891).

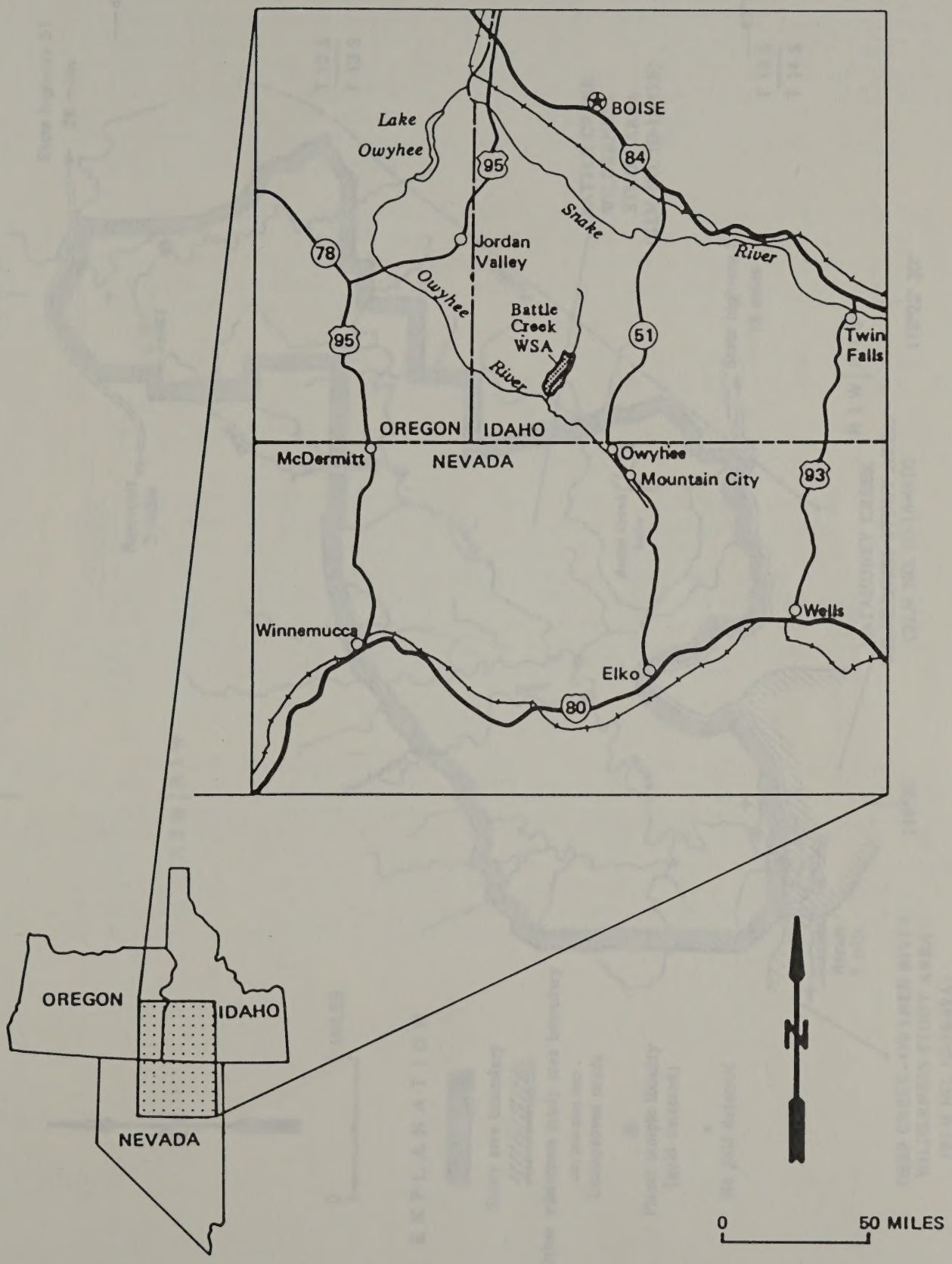

FIGURE 1. – Location map of the Battle Creek Wilderness Study Area, Idaho

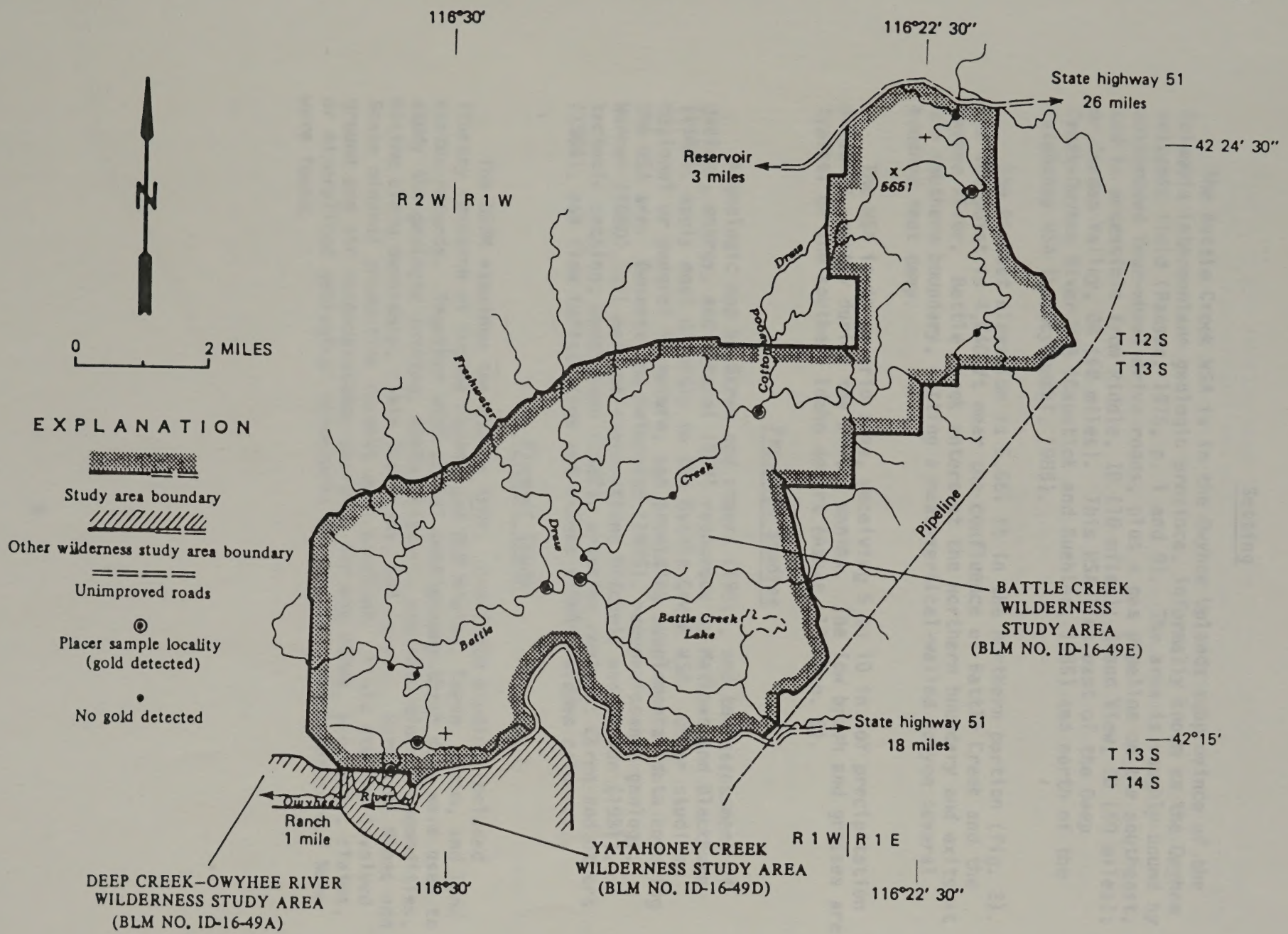

FIGURE 2. – Sample localities in the Battle Creek Wilderness Study Area

Setting

The Battle Creek WSA is in the Owyhee Uplands subprovince of the Columbia Intermontane geologic province, informally known as the Owyhee volcanic field (Pansze, 1975, p. 1 and 9). The area is roughly bound by unimproved four-wheel-drive roads, plus a gas pipeline on the southeast, and is accessible from Riddle, ID (18 miles); Grand View, ID (50 miles); or Jordan Valley, OR (68 miles). This WSA lies east of the Deep Creek-Owyhee River WSA (Capstick and Buehler, 1985) and north of the Yatahoney WSA (Leszcykowski, 1985).

The highest elevation is 5,651 ft in the northern portion (fig. 2). The low point is 4,640 ft near the confluence of Battle Creek and the Owyhee River. Battle Creek enters at the northern boundary and exits at the southern boundary, cutting a near-vertical-walled canyon several hundred feet deep.

The WSA is in an arid zone, receiving 5 to 10 in. of precipitation annually, mostly during the winter months. The low brush and grasses are typical of the southern Idaho desert (Asher, 1968, p. 6).

Previous Studies

A geologic map by Ekren and others (1981), and the assessment of geology, energy, and mineral (GEM) resources by Mathews and Blackburn (1983), apply most directly to the Battle Creek WSA. Other studies, regional or general in nature, and providing supplemental data covering the WSA are: Bennett and Galbraith (1975), reconnaissance geology; Warner (1980), oil and gas exploration; Mitchell and Garson (1981), tectonic setting; Bonnichsen (1982), eruptive centers; Ekren and others (1984), ash flow tuffs; Siems and others (1984), hidden calderas.

Present Study

The USBM examined the WSA in 1984. Pre-field studies included library research of Owyhee County and BLM mining, lease, claim, and land status records. Together with aerial photography these data were used to study the geologic setting, mining history, possible mineral commodities, mining claim ownership, claim locations, and access. Bureau of Mines and State mineral production records were examined. Field studies involved ground and air reconnaissance searches for any mines, prospects, claims, or mineralized geological structures not noted in the literature. None were found.

Twelve placer samples were taken (fig. 2). They consisted of two 14 in. panfuls of stream sand and gravel concentrated to check for presence of gold or other heavy minerals. The samples, partially concentrated in the field, were further concentrated on a laboratory-size Wilfley table. Resulting heavy mineral fractions were scanned with a binocular microscope to determine heavy mineral content; when gold was detected, it was recovered by amalgamation. Concentrates were also checked for radioactivity and fluorescence. Several rock samples were taken from fault traces and were random chip samples - an unsystematic series of chips taken from an exposure of possibly mineralized rock. No economically significant mineral concentrations were detected.

ACKNOWLEDGEMENTS

The author wishes to thank the BLM Boise District Office for the use of their aerial photographs. Steven D. Robinson, of the USBM, shared equally in the field work and logistics.

GEOLOGIC SETTING

In the Battle Creek WSA only two rock units are exposed. The oldest is the Miocene tuff of Little Jacks Creek; an extremely dense, welded, flow-layered rhyolite tuff, at least 900 ft thick where measured north of the study area (Ekren and others, 1984, p. 55). Bonnichsen (1982, p. 252) suggests that this unit is the result of an eruptive center along the margin of the western Snake River Plain. Ekren and others (1984, p. 50 and 65) place this eruptive center on the eastern Owyhee Plateau, expressed today as a gentle dome without structural features indicative of cauldron subsidence. The other rock unit in the WSA is the Miocene Banbury Basalt, a basaltic lava (Ekren and others, 1981). In the WSA the Little Jacks Creek Tuff occurs over the entire area, with the eastern portion capped by the Banbury Basalt. Mapped faults trend north-northwest in these Tertiary covering rocks and may have provided conduits for mineralizing solutions emanating from major structural features in the basement rocks--the nature of which is unknown.

Sand and gravel occurrences along Battle Creek and tributaries are small in volume and consist of gravel and fragments of the local extrusive rocks, as well as intrusive rocks from north of the study area.

APPRAISAL OF MINERAL RESOURCES

No mining districts are in the WSA, nor were any mines, claims, or mineral production reported. In early 1984 about fifty percent of the WSA was covered by oil and gas leases or lease applications. No known exploration has occurred.

Of the twelve placer samples collected, six contained measurable gold (fig. 2). Computed at $400 per troy ounce, each of the six samples have a gold value of less than $0.02/yd^3. A stream sediment sample from the confluence of Battle Creek and the Owyhee River, taken during a previous study 2/, contained a gold value of $0.08/yd^3. The downcutting streams in the WSA have not deposited sediments in volumes that would form significant gravel deposits. The source of the gold is assumed to be about 20 miles north of the WSA, where the headwaters of Battle Creek drain several old mining areas in granitic rocks, in dikes ranging from diorite to rhyolite, and in the Challis Volcanics--rocks found only in gravels in the study area. No economic concentrations of minerals were detected in fourteen samples of volcanic rocks in the WSA.

2/ Morris, R. W., 1976, Mineral resources of the Owyhee River area, Idaho and Oregon: U.S. Bureau of Mines unpublished report as a contribution to MRS-11 and Wild and Scenic Rivers Studies.

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